User's Manual

CL120
Clamp-on Tester

IM CL120

Contents

■ Precautions for Safety Use of the Instrument
1. Instrument Layout
2. Measurement
   2.1 Preparation for Measurement
   2.2 AC Current Measurement
3. Other Functions
   3.1 Auto-Power-Off Function
   3.2 Data Hold Function
   3.3 Optional Accessories
4. Battery Replacement
5. Specifications
6. Calibration and After-sales Service

YOKOGAWA
Yokogawa M&C Corporation

IM CL120
2nd Edition: June 2003 (MC)

■ Precautions for Safe Use of the Instrument

When handling the instrument, ALWAYS observe all of the cautionary notes on safety given below. Yokogawa M&C Corporation is not at all liable for damage resulting from misuse of this product by the user that is contrary to these cautionary notes.
Various symbols are used on the instrument and in this manual to ensure the product is used safety and to protect operators and property from possible hazards or damage. The following safety symbols are used where appropriate. Read the explanations carefully and familiarize yourself with the symbols before reading the text.

The instrument and this manual use the following safety symbols:

⚠ Danger! Handle with Care.
This symbol indicates that the operator must refer to an explanation in the User's Manual in order to avoid the risk of personal injury or death and/or damage to the instrument.

⧈ Double Insulation
This symbol indicates double insulation.

~ AC Voltage/Current
This symbol indicates AC voltage or current.

⏚ Ground
This symbol indicates ground (earth)

⚠ WARNING

Indicates that there is a possibility of serious personal injury or loss of life if the operating procedure is not followed correctly and describes the precautions for avoiding such injury or loss of life.

⚠ CAUTION

Indicates that there is a possibility of serious personal injury of damage to the instrument if the operating procedure is not followed correctly and describes the precautions for avoiding such injury or damage.

NOTE
Draws attention to information essential for understanding the operation and features.

⚠ WARNING

- Never make measurement on a circuit above 300V AC.
- Do not use the instrument in an atmosphere where any flammable or explosive gas is present.
- The transformer jaws are made of metal and their tips are not insulated. Be especially careful about the hazard of possible shorting where the equipment under test has exposed metal parts.
- Avoid using the instrument if it has been exposed to rain or moisture or if your hands are wet.
- Do not exceed the maximum allowable input of any measurement range.
- Never open the battery compartment cover when making measurement.
- Do not use the instrument if there is any damage to the casing or when the casing is removed.
- Do not install substitute parts or make any modification to the instrument. Return the instrument to Yokogawa M&C or your distributor for repair or re-calibration.
- Always switch off the instrument before opening the battery compartment cover for battery replacement.

⚠ WARNING

To avoid damage to the instrument or electric shock!
The restrictions on the maximum voltage level for which the CL120 testers can be used, depend on the over-voltage categories specified by the safety standards. These category specifications are formulated to protect operators against transient impulse voltage in power lines.

Function	Maximum Allowable Input
	OVERVOLTAGE CATEGORY III
~A	200Arms AC Measuring circuit voltage : 300Vrms AC

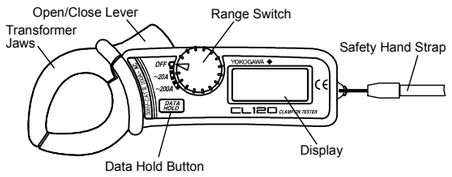
Over-voltage category I (CAT.I):
Signal level, special equipment or parts of equipment, telecommunication, electronic etc., with smaller transient over-voltages than CAT.II.
Over-voltage category II (CAT.II)
Local level, appliance, portable equipment etc., with smaller transient over-voltages than CAT.III.
Over-voltage category III (CAT.III):
Distribution level, fixed installation, with smaller transient over-voltages than CAT.IV.

⚠ CAUTION

- Be sure to set the Range Switch to the "OFF" position after use. When the instrument will not be in use for a long period of time, Place it in storage after removing the battery.
- Use a damp cloth and detergent for cleaning the instrument. Do not use abrasives or solvents.

NOTE
- Radiation immunity affects the accuracy of CL120 testers under the conditions specified in EN 61000-4-3: 1997.
- If equipment generating strong electromagnetic interference is located nearly, the testers may malfunction.

1. Instrument Layout



2. Measurement

2.1 Preparation for Measurement

⚠ CAUTION

- The jaw section is a delicate, precision sensor. Do not subject the jaw to unreasonably strong shock, vibration, or force when using it.
- If dust gets into the tops of the jaws, remove it immediately. Do not close the jaws when dust is trapped in its joints as the sensor may break.
- Please check that the Range switch is set to the desired position before measurement.

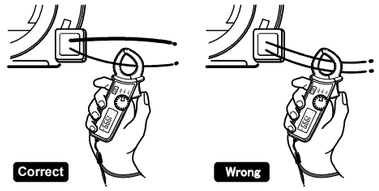
2.2 AC Current Measurement

⚠ WARNING

Never use the instrument on a circuit above 300V AC. This may cause electrical shock hazard and damage to the instrument or the circuit under test.

(1) Set the Range Switch to the "~20A" or "~200A" position. "AC" should be shown on the upper left corner of the display.
(2) Press the open/close lever to open the transformer jaws and clamp them onto a single conductor and take the reading on the display. The most accurate reading will be obtained by keeping the conductor at the center of the transformer jaws.

NOTE
- During current measurement, keep the transformer jaws fully closed. Otherwise, accurate measurements cannot be taken. Maximum conductor size is 24mm in diameter.



3. Other Functions

3.1 Auto-Power-Off Function

This is a function to prevent the instrument from being left powered on in order to conserve battery life. The instrument automatically turns off about 10 minutes after the last switch or button operation.

To turn to normal mode, turn the Range switch to "OFF", then to the desired position.

3.2 Data Hold Function

This is a function used to freeze the measured value on the display. Press the DATA HOLD button to freeze the reading. The reading will be held regardless of subsequent variation in input. "H" is shown on the upper right corner of the display while the instrument is in the Data Hold mode.

To exit the Data Hold mode, press the DATA HOLD button again.

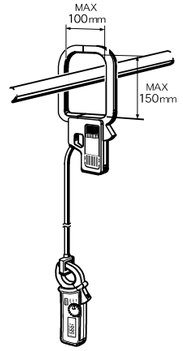
NOTE
When the Auto-Power-Off function works while instrument is in the data hold mode, data hold is cancelled.

3.3 Optional Accessories

Clamp Adapter Model 99025 (For AC current measurement only)

Clamp Adapter Model 99025 is designed to increase the measuring capability of a clamp meter. With the use of the Clamp Adapter, you can not only extend current range over 2000A, but also clamp on a large bus-bar or conductor.

(1) Set the Range Switch to the "~A" position.
(2) As shown in the figure below, clamp Model CL120 onto the pickup coil of Model 99025.
(3) Clamp Model 99025 onto the bus-bar or conductor under test.
(4) Take the reading on Model CL120 and multiply it by 10.



NOTE
For the detailed specification, refer to the Clamp Adapter User's Manual.

4. Battery Replacement

⚠ WARNING

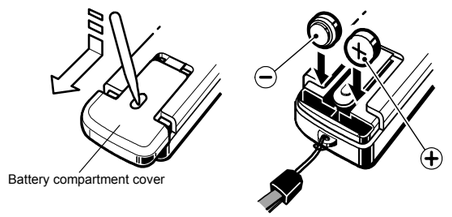
T To avoid electric shock hazard, never try to replace batteries during measurement.

⚠ CAUTION

- Do not mix new and old batteries.
- Make sure to install battery in correct polarity as indicated in battery compartment.

If the battery voltage becomes too low for the instrument to operate normally, "BATT" is shown on the display. Then, replace the battery. Note that when the battery is completely exhausted, the display blanks without "BATT" shown.

(1) Set the Range Switch to the "OFF" position.
(2) Press in the hole on the battery compartment cover with the tip of a pointed object, then slide open the cover.
(3) Replace the battery observing correct polarity. Use two new LR44 or SR44 batteries.
(4) Slide the battery compartment cover back in place.



5. Specifications

■Instrument Specifications

- Measuring Ranges and Accuracy (at 23±5°C, relative humidity up to 75%)

AC Current ~

Range	Measuring Range	Accuracy
20A	0 to 19.99A	±2.0% rdg ±7dgt (50 to 1kHz)
200A	0 to199.9A	±2.0% rdg ±5dgt (50/60Hz) ±3.0% rdg ±10dgt (40Hz to 1kHz)

■ General Specifications

- Operating System : Dual integration
- Measurement Function : AC current
- Display : Liquid crystal display with maximum counts of 1999
- Overrange Indication : "1" flashes on the highest digit
- Response Time : Approx. 2 second.
- Sample Rate : Approx. 2.5 times per second
- Temperature and Humidity for Guaranteed Accuracy : 23°C ±5°C, relative humidity up to 75% without condensation
- Operating Temperature and Humidity : 0 to 40°C, relative humidity up to 85% without condensation
- Storage Temperature and Humidity : -10 to 50°C, relative humidity up to 75% without condensation
- Effect of conductor position : Within 2% difference between maximum and minimum values to a 10 mm-dia conductor
- Effect of external magnetic field : 0.8 A or less in AC magnetic field of 400 A/m
- Power Source : Tow LR44 or SR44 (3V DC) batteries
- Battery Life : Approx. 100 hours (continuous)
- Current Consumption : Approx. 1mA
- Auto-power-off function : Turns power off approx. 10 minutes after the last switch operation
- Withstanding Voltage : 3700V AC for 1 minute between housing case and metal part of jaws
- Insulation Resistance : 10MΩ or greater at 1000V between housing case and metal part of jaws
- Conductor Size : Approx. 24mm diameter max.
- Dimensions : Approx. 59(W) x 147(H) x 26(D) mm
- Weight : Approx. 100g (batteries included)
- Safety Standard: EN 61010-1
  EN 61010-2-032
  (300V AC CAT. III, Pollution degree2, indoor use)
- EMC Standard: EN 55022
- Radiation immunity : EN 61000-4-3
- Accessories : LR44 battery····· 2
  Carrying case Model 93033····· 1
  User's Manual ····· 1
- Optional Accessories : Clamp adapter Model 99025

6. Calibration and After-sales Service

Should any failure occur while you are using the tester, follow the instructions given below. If the tester still fails to operate correctly and needs repair, contact the vendor from whom you purchased the instrument or the nearest Yokogawa M&C sales office.

- Turn off the POWER switch once, then turn it back on again.
- If the tester does not turn on, replace the battery with a new one.

Calibration
It is recommended that the instrument be calibrated once every year.

Test Equipment Depot
1-800-517-8431
Test Equipment Depot - 800.517.8431 - 99 Washington Street Melrose, MA 02176
FAX 781.665.0780 - TestEquipmentDepot.com